

WHAT IS CLAIMED IS:

1. A digital micromirror device comprising:
  - a first electrode and a second electrode;
  - a micromirror located over said first electrode and said second electrode;
  - 5 a first switching element; a second switching element; and
  - an SRAM; wherein:
    - an output of said first switching element is connected to said first electrode;
    - an output of said second switching element is connected to said second
    - electrode;
    - 10 an input of said SRAM is connected to said first electrode;
    - an output of said SRAM is connected to said second electrode; and
    - the voltages of the input and the output of said SRAM mutually differ.
2. A digital micromirror device comprising:
  - 15 a micromirror;
  - a first electrode and a second electrode for changing the inclination of the micromirror;
  - a first switching element;
  - a second switching element; and
  - 20 an SRAM; wherein:
    - an output of said first switching element is connected to said first electrode;
    - an output of said second switching element is connected to said second
    - electrode;
    - an input of said SRAM is connected to said first electrode;
    - 25 an output of said SRAM is connected to said second electrode; and
    - voltages of the input and the output of said SRAM mutually differ.
3. A digital micromirror device comprising:
  - a micromirror;
  - 30 a first electrode and a second electrode for changing the inclination of said micromirror;
  - a first switching element;
  - a second switching element; and
  - an SRAM; wherein:
    - 35 a second voltage is imparted to said second electrode by said SRAM when

a first voltage is imparted to said first electrode by said first switching element;

said first voltage is imparted to said second electrode by said SRAM when said second voltage is imparted to said first electrode by said first switching element;

5        said first voltage is imparted to said first electrode by said SRAM when said second voltage is imparted to said second electrode by said second switching element;

        a switching of said first switching element is controlled by a first signal; and

10        a switching of said second switching element is controlled by a second signal.

        4. A digital micromirror device comprising:

        a micromirror;

15        a first electrode and a second electrode for changing the inclination of said micromirror;

        a first switching element for imparting a first voltage or a second voltage to said first electrode;

20        a second switching element for imparting said first voltage or said second voltage to said second electrode; and

        an SRAM for imparting said second voltage to one of said first electrode and said second electrode, when said first voltage is imparted to the other one of electrodes, and imparting said first voltage to one of said first electrode and said second electrode, when said second voltage is imparted to the other one of said electrodes.

        5. A digital micromirror device comprising:

        a micromirror;

30        a first electrode and a second electrode for changing the inclination of said micromirror;

        a first switching element for imparting a first voltage or a second voltage to said first electrode;

        a second switching element for imparting said first voltage or said second voltage to said second electrode; and

35        an SRAM for: imparting said second voltage to one of said first electrode

and said second electrode, when said first voltage is imparted to the other one of electrodes; and imparting said first voltage to one of said first electrode and said second electrode, when said second voltage is imparted to the other one of the electrodes;

5        wherein:

        a switching of said first switching element is controlled by a first signal;  
and

        a switching of said second switching element is controlled by a second signal.

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        6. The digital micromirror device according to claim 2, wherein the SRAM comprises two p-channel transistors and two n-channel transistors.

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        7. The digital micromirror device according to claim 3, wherein the SRAM comprises two p-channel transistors and two n-channel transistors.

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        8. The digital micromirror device according to claim 4, wherein the SRAM comprises two p-channel transistors and two n-channel transistors.

        9. The digital micromirror device according to claim 5, wherein the SRAM comprises two p-channel transistors and two n-channel transistors.

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        10. The digital micromirror device according to claim 2, wherein the SRAM comprises two p-channel transistors and two resistors.

        11. The digital micromirror device according to claim 3, wherein the SRAM comprises two p-channel transistors and two resistors.

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        12. The digital micromirror device according to claim 4, wherein the SRAM comprises two p-channel transistors and two resistors.

        13. The digital micromirror device according to claim 5, wherein the SRAM comprises two p-channel transistors and two resistors.

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        14. The digital micromirror device according to claim 2, wherein the

SRAM comprises two n-channel transistors and two resistors.

15. The digital micromirror device according to claim 3, wherein the SRAM comprises two n-channel transistors and two resistors.

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16. The digital micromirror device according to claim 4, wherein the SRAM comprises two n-channel transistors and two resistors.

10 17. The digital micromirror device according to claim 5, wherein the SRAM comprises two n-channel transistors and two resistors.

18. An electronic device having the digital micromirror device according to claim 2.

15 19. An electronic device having the digital micromirror device according to claim 3.

20 20. An electronic device having the digital micromirror device according to claim 4.

21. An electronic device having the digital micromirror device according to claim 5.

25 22. An electronic device having the digital micromirror device according to claim 6.

23. An electronic device having the digital micromirror device according to claim 7.

30 24. An electronic device having the digital micromirror device according to claim 8.

35 25. The electronic device according to claim 18, wherein the electronic device is selected from the group consisting of a projector, a printer, and a copy machine.

26. The electronic device according to claim 19, wherein the electronic device is selected from the group consisting of a projector, a printer, and a copy machine.

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27. The electronic device according to claim 20, wherein the electronic device is selected from the group consisting of a projector, a printer, and a copy machine.

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28. The electronic device according to claim 21, wherein the electronic device is selected from the group consisting of a projector, a printer, and a copy machine.

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29. The electronic device according to claim 22, wherein the electronic device is selected from the group consisting of a projector, a printer, and a copy machine.

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30. The electronic device according to claim 23, wherein the electronic device is selected from the group consisting of a projector, a printer, and a copy machine.

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31. The electronic device according to claim 24, wherein the electronic device is selected from the group consisting of a projector, a printer, and a copy machine.

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32. A method of driving a digital micromirror device having a plurality of pixels, each pixel including: a micromirror; a first electrode and a second electrode for changing the inclination of said micromirror; and an SRAM; said method comprising the steps of:

preparing n display periods and j non-display periods within one frame period in each of said plurality of pixels;

imparting a second voltage to said second electrode by said SRAM in each of n display periods if a first voltage of a digital signal of bits corresponding to each of n display periods is imparted to said first electrode of each of said plurality of pixels;

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imparting said first voltage to said second electrode by said SRAM in each of  $n$  display periods if said second voltage of the digital signal of bits corresponding to each of  $n$  display periods is imparted to said first electrode of each of said plurality of pixels;

5        imparting said first voltage to said first electrode by said SRAM in each of  $j$  non-display periods if said second voltage is imparted to said second electrode of each of said plurality of pixels;

preparing any one of said  $n$  display periods again, after all of said  $n$  display periods appear;

10        wherein a ratio of the lengths of said  $n$  display periods is expressed as  $2^0 : 2^1 : \dots : 2^{(n-1)}$ .

33. A method of driving a digital micromirror device having a plurality of pixels, each pixel including: a micromirror; a first electrode and a second  
15        electrode for changing the inclination of said micromirror; an SRAM; a first switching element; and a second switching element; said method comprising the steps of:

preparing  $n$  display periods and  $j$  non-display periods within one frame period in each of said plurality of pixels;

20        imparting a second voltage to said second electrode by said SRAM in each of  $n$  display periods if a first voltage of a digital signal of bits corresponding to each of  $n$  display periods is imparted to said first electrode of each of said plurality of pixels, in accordance with said first switching element turning on;

25        imparting said first voltage to said second electrode by said SRAM in each of  $n$  display periods if said second voltage of the digital signal of bits corresponding to each of  $n$  display periods is imparted to said first electrode of each of said plurality of pixels, in accordance with said first switching element turning on;

30        imparting said first voltage to said first electrode by said SRAM in each of  $j$  non-display periods if said second voltage is imparted to said second electrode of each of said plurality of pixels, in accordance with said second switching element turning on;

preparing any one of said  $n$  display periods again, after all of said  $n$  display periods appear;

35        wherein a ratio of the lengths of said  $n$  display periods is expressed as  $2^0 :$

$2^1 : \dots : 2^{(n-1)}.$

34. A method of driving a digital micromirror device having a plurality of pixels, each pixel including:

- 5 a micromirror;
- a first electrode and a second electrode for changing the inclination of said micromirror; and

an SRAM for imparting a second voltage to one of said first electrode and said second electrode, when a first voltage is imparted to the other one of  
10 electrodes, and imparting said first voltage to one of said first electrode and said second electrode, when said second voltage is imparted to the other one of the electrodes;

said method comprising the steps of:

- 15 preparing  $n$  first display periods and  $j$  second display periods within one frame period in each of said plurality of pixels;

imparting said first voltage or said second voltage of a digital signal of bits corresponding to each of  $n$  first display periods to said first electrode of each of said plurality of pixels in each of  $n$  first display periods;

- 20 imparting said first voltage or said second voltage of a digital signal of bits corresponding to each of  $j$  second display periods to said second electrode of each of said plurality of pixels in each of  $j$  second display periods;

preparing one of said  $n$  first display periods and one of said  $j$  second display periods again, after all of said  $n$  first display periods and  $j$  second display periods appear;

- 25 wherein a ratio of the lengths of said  $n$  first display periods and the lengths of said  $j$  second display periods is expressed as  $2^0 : 2^1 : \dots : 2^{(n-1)}.$

35. A method of driving a digital micromirror device having a plurality of pixels, each pixel including:

- 30 a micromirror;
- a first electrode and a second electrode for changing the inclination of the micromirror;

a first switching element;  
a second switching element; and

- 35 an SRAM for imparting a second voltage to one of said first electrode and

said second electrode, when said first voltage is imparted to the other one of electrodes, imparting said first voltage to one of said first electrode and said second electrode, when said second voltage is imparted to the other one of the electrodes;

5        said method comprising the steps of:

      preparing n first display periods and j second display periods within one frame period in each of said plurality of pixels;

      imparting said first voltage or said second voltage of a digital signal of bits corresponding to each of n first display periods to said first electrode of each of  
10        said plurality of pixels in each of n first display periods, in accordance with said first switching element turning on;

      imparting said first voltage or said second voltage of a digital signal of bits corresponding to each of j second display periods to said second electrode of each of said plurality of pixels in each of j second display periods, in accordance with  
15        said second switching element turning on;

      preparing any one of said n first display periods and any one of said j second display periods again, after all of said n first display periods and j second display periods appear; and

      wherein a ratio of the lengths of said n first display periods and the lengths  
20        of said j second display periods is expressed as  $2^0 : 2^1 : \dots : 2^{(n-1)}$ .

36. The method of driving a digital micromirror device according to claim 32, wherein black is displayed when a second voltage is imparted to a second electrode in each of a plurality of pixels.

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37. The method of driving a digital micromirror device according to claim 33, wherein black is displayed when a second voltage is imparted to a second electrode in each of a plurality of pixels.

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38. The method of driving a digital micromirror device according to claim 34, wherein black is displayed when a second voltage is imparted to a second electrode in each of a plurality of pixels.

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39. The method of driving a digital micromirror device according to claim 35, wherein black is displayed when a second voltage is imparted to a second



